

Sustainable Materials for Energy Efficient Homes: A Problem-Based Unit

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Synopsis

This unit will delve into several aspects of home design that relates to the materials science theme of this seminar. As a hook to the unit, the students will receive a letter from an urban development company informing them that they've won a plot of land but there are strings attached. To keep the land, they have to plan a design for a sustainable and energy efficient home. Next, using a problem-based learning format, the students will be led through a guided investigation of different building materials and face the challenge of selecting appropriate building materials to build a home in region with a challenging climate. By the end of the unit, the students will be able to provide a rationale for their selection of building materials based on the properties of the materials. As a culminating activity, the students will present their home design along with their rationale for choosing particular building materials. They will play the role of a home developer and will need to adhere to sustainable building principles to make recommendations as to the materials and resources that would be necessary to build their sustainable and energy efficient homes.